# http://www.ric.edu/webcommunications/images/SealWithText_Small_Black.pngUNDERGRADUATE CURRICULUM COMMITTEE (UCC)PROPOSAL FORM

## Cover page scroll over blue text to see further important [instructions](#instructions): please read.

**N.B. DO NOT USE HIGHLIGHT, please DELETE THE WORDS THAT DO NOT APPLY TO YOUR PROPOSAL**

**ALL numbers in section (A) need to be completed, including the impact ones.**

|  |  |  |
| --- | --- | --- |
| A.1. [Course or program](#Proposal) | **Chem 310 biochemistry (all CHEM programs affected)** |  |
| [Replacing](#Ifapplicable)  |  |
| A.2. [Proposal type](#type) | **Course: revision** **Program:** [**revision**](#revision) |
| A.3. [Originator](#Originator) | **Karen Almeida** | [Home department](#home_dept) | **Physical Sciences** |
| A.4. [Context and Rationale](#Rationale)  | **According to the American Chemical Society, biochemistry is one of the 5 sub-disciplines necessary for a strong chemistry program and should provide a breadth and foundation for in-depth coursework. Currently, biochemical concepts and techniques are being taught conceptually. We propose to increase the course credit for CHEM 310 from 3 credits to 4 credits, allowing for the implementation of additional active learning strategies to reinforce understanding in a visual, concrete manner. These exercises will enhance skills necessary for all chemistry majors and will provide context and techniques for advanced chemistry courses, such as the upper level laboratory course CHEM 422. All CHEM programs will be raised by one credit as a result of this change.****We are proposing to use the additional 14 hours of instructional meeting time to build research foundations. Specifically, we plan to divide our additional time into four potential categories that may change based on the level of student understanding. The categories include 1) buffer preparation, 2) pipetting skills, 3) restriction enzyme digestions and horizontal gel electrophoresis, and 4) protein purification and SDS-PAGE analysis. All activities will be incorporated into the current conceptual discussions to promote student understanding and skill building.** |
| A.5. [Student impact](#student_impact) | **All students pursuing a chemistry degree will be required to take an additional credit but no new courses are being proposed.** |
| A.6. [Impact on other programs](#impact)  | **Health Science majors pursuing Food Science and Medical Laboratory Sciences will have an additional credit added to their programs.** |
| A.7. [Resource impact](#Resource) | [*Faculty PT & FT*](#faculty):  | **None.** |
| [*Library*:](#library) | **None.** |
| [*Technology*](#technology) | **None.** |
| [*Facilities*](#facilities): | **Increased use of biochemistry lab CS 106** |
| A.8. [Semester effective](#Semester_effective) | **Fall 2018** | A.9. [Rationale if sooner than next Fall](#Semester_effective) |  |

B. [NEW OR REVISED COURSES](#delete_if)  **DO NOT use highlight. Delete this whole page if the proposal does not include a new or revised course.**

|  | Old ([for revisions only](#Revisions))Only include information that is being revised, otherwise leave blank (delete provided examples that do not apply) | NewExamples are provided for guidance, delete the ones that do not apply |
| --- | --- | --- |
| B.1. [Course prefix and number](#cours_title)  | **CHEM310** | **CHEM310** |
| B.2. Cross listing number if any |  |  |
| B.3. [Course title](#title)  | **Biochemistry** | **Biochemistry** |
| B.4. [Course description](#description)  |  |  |
| B.5. [Prerequisite(s)](#prereqs) | **CHEM206** | **CHEM206** |
| B.6. [Offered](#Offered) | **Fall**  | **Fall**  |
| B.7. [Contact hours](#contacthours)  | **3** | **4** |
| B.8. [Credit hours](#credits) | **3** | **4** |
| B.9. [Justify differences if any](#differences) |  |
| B.10. [Grading system](#grading)  | **Letter grade**  | **Letter grade**  |
| B.11. [Instructional methods](#instr_methods) | **Lecture**  | **Lecture**  |
| B.12.[Categories](#required) | **Required for major/minor**  | **Required for major/minor**  |
| B.13. Is this an Honors course? | **NO** | **NO** |
| B.14. [General Education](#ge)N.B. Connections must include at least 50% Standard Classroom instruction. | **NO**  | **NO** |
| B.15. [How will student performance be evaluated?](#performance) | **Attendance | Class participation | Exams | Presentations | Papers |** **Class Work | Interviews | Quizzes |** | **Attendance | Class participation | Exams | Presentations | Papers |** **Class Work | Interviews | Quizzes |****Performance Protocols | Projects |**  |
| B.16. [Redundancy statement](#competing) |  |  |
| B. 17. Other changes, if any |  |

| B.18**.** [**Course learning outcomes**](#outcomes)**: List each one in a separate row** | [**Professional Org.Standard(s)**](#standards)**, if relevant** | [**How will each outcome be measured**](#measured)**?** |
| --- | --- | --- |
|  |  |  |
|  |  | Click Tab from here to add rows |

| B.19. [**Topical outline**](#outline)**: Do NOT insert whole syllabus, we just need a two-tier outline** |
| --- |
| 1. Background information includes SI prefixes, acid/base chemistry, and reviews of both thermodynamics and kinetics
	1. Lecture and calculation problems
	2. IN CS106: Pipetting exercise
	3. Henderson-Hasselbach discussion and calculation problems
	4. IN CS 106: Buffer preparation including autoclaving vs sterile filtering
2. Protein Composition and Structure
3. Exploring Protein
	1. Discussion of how one studies protein and what is a proteome
	2. Discussion of purification concepts and calculations
	3. IN CS 106: Ni-NTA purification and preparation of SDS-PAGE samples
	4. IN CS 106: Preparing and running an SDS-PAGE gel
4. DNA, RNA and the flow of Genetic Material
	1. Discussion of how one studies DNA and what is a plasmid
	2. Calculations to perform RE digestion including discussion of controls
	3. Hazardous chemical handling and waste disposal discussion
	4. IN CS 106: Preparation and running of 1% agarose gel
5. Exploring Genes
6. Exploring Evolution and Bioinformatics
7. Enzyme Kinetics
8. Catalytic Strategies
9. Carbohydrates
10. Lipids and Membranes
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|  |

C. [Program Proposals](#program_proposals) **complete only what is relevant to your proposal Delete this whole page if the proposal is not revising, creating, deleting or suspending any progam.**

|  | [Old (for revisions only)](#old_program) | New/revised |
| --- | --- | --- |
| C.1. [Enrollments](#enrollments) |  |  |
| C.2. [Admission requirements](#admissions) |  |  |
| C.3. [Retention requirements](#retention) |  |  |
| C.4. [Course requirements](#course_reqs) for each program option |  |  |
| C.5. [Credit count](#credit_count) for each program option | **Chemistry BA 49-50****Concentration in Environmental BA 54****Chemistry BS Concentration in Biochemistry 66-67****Concentration in Environmental BS 68-69****Concentration in Professional BS 64-65****Health Sciences:****Food Safety 79****Medical Laboratory Sciences 94** | **Chemistry BA 50-51****Concentration in Environmental BA 55****Chemistry BS Concentration in Biochemistry 67-68****Concentration in Environmental BS 69-70****Concentration in Professional BS 65-66****Health Sciences:****Food Safety 80****Medical Laboratory Sciences 95** |
| C.6. Other changes if any |  |  |
| C.7 [Program goals](http://www-prod.ric.edu/curriculum_committee/documents/Program%20goals)Needed for all new programs |  |  |

## D. Signatures

* Changes that affect General Education in any way MUST be approved by ALL Deans and COGE Chair.
* Changes that directly impact more than one department/program MUST have the signatures of all relevant department chairs, program directors, and relevant dean (e.g. when creating/revising a program using courses from other departments/programs). Check UCC manual 4.2 for further guidelines on whether the signatures need to be approval or acknowledgement.
* Proposals that do not have appropriate approval signatures will not be considered.
* Type in name of person signing and their position/affiliation.
* Send electronic files of this proposal and accompanying catalog copy to curriculum@ric.edu and a printed or electronic signature copy of this form to the current Chair of UCC. Check UCC website for due dates.

##### D.1. Approvals: required from programs/departments/deans who originate the proposal. may include multiple departments, e.g., for joint/interdisciplinary prposals.

| Name | Position/affiliation | [Signature](#_Signature" \o "Insert electronic signature, if available, in this column) | Date |
| --- | --- | --- | --- |
| Sarah Knowlton | Chair of Physical Sciences |  |  |
| Earl Simson | Dean of Arts and Sciences |  |  |

##### D.2. [Acknowledgements](#acknowledge): REQUIRED from OTHER PROGRAMS/DEPARTMENTS IMPACTED BY THE PROPOSAL. SIGNATURE DOES NOT INDICATE APPROVAL, ONLY AWARENESS THAT THE PROPOSAL IS BEING SUBMITTED. CONCERNS SHOULD BE BROUGHT TO THE UCC COMMITTEE MEETING FOR DISCUSSION

| Name | Position/affiliation | [Signature](#Signature_2) | Date |
| --- | --- | --- | --- |
| Eric Hall | Director of Health Sciences |  |  |
|  |  |  |  |
|  |  |  | Tab to add rows |